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EXAMINER

JONES, JUDSON

ART UNIT PAPER NUMBER

2834

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/036,769

Applicant(s)

TEMESVARY ET AL.

Examiner

Judson H Jones

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 16-21, 23-29 and 33-40 is/are rejected.
- 7) ☒ Claim(s) 13-15, 22, 30-32 and 41-43 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claim 25 is objected to because of the following informalities: the top or base support structure of the fixed frame lacks antecedent basis. Claim 1 recites only a fixed frame. While it could be argued that every physical element has a top, and it is thus implied that the fixed frame has a top, every fixed frame does not have a base support structure. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant states first that the transmitter coil is inductively coupled but does not state what the transmitter coil is inductively coupled to. However since the device is an inductive position sensor and there is also a transmitter coil, a person of ordinary skill in the art would understand that the transmitter coil is inductively coupled to the receiver coil. Inductive coupling means that a change in inductance in one of the coils produces a change in inductance in the other coil. Therefore the last phrase in the claim about the receiver coil supported in an inductively coupled manner makes no sense because it has already been established that the transmitter coil and the receiving coil are inductively coupled.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 10, 12, 17-21 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Haeberle et al. 6,369,400 B2. Haeberle et al. discloses in column 4 line 63 to column 6 line 33 a moving coil motor comprising a fixed frame 5, a movable member 1, magnet means 7.1, 7.2 and at least one conductive element 2 on the movable member so as to move the movable member in one or more degrees of freedom.

In regard to claims 2 and 8, see figure 1B.

In regard to claim 3, see figure 1A.

In regard to claims 4-8, see elements 2 in figure 1A of Haeberle et al. and see column 5 lines 37-63.

In regard to claim 12, the fixed frame 5 of Haeberle et al. comprises four sides, with two sides in parallel in one direction and the other two sides in parallel in another direction.

In regard to claims 17-21, see Haeberle et al. column 5 lines 20-24 and lines 59-60 and see figure 1A. For claim 19 also see Haeberle et al. column 3 lines 23-36 and column 5 lines 64-67.

In regard to claim 33, see element 1 in Haeberle et al. figure 1B.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberle et al. in view of Asada et al. 5,606,447 A and Jabbar et al. 5,283,491 A. Haeberle et al. discloses the moving coil motor but does not disclose a cylindrical magnetic assembly comprising two ferromagnetic materials. Asada et al. discloses a type of commercially available cylindrical magnet in column 7 lines 12-20, the magnet being of a size suitable for use in a MEM (microelectrical mechanical) device. Since Asada et al. and Haeberle et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized the commercially available circular magnet in order to simplify the construction of a moving coil device. The device of Haeberle et al. as modified by Asada et al. does not disclose two ferromagnetic materials, one generally cylindrical, one having a remnant magnetic field and one coaxially positioned about the other. Jabbar et al. discloses a

steel cylinder 13 surrounding magnets 15 where the steel cylinder provides a flux path for the magnets. Since Jabbar et al. and Haeberle et al. as modified by Asada et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a steel cylinder to serve as a flux path for the magnets and to thus improve the efficiency of the motor by directing the flux where it can most effectively move the movable member.

Claims 11, 34, 36-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberle et al. in view of Michalicek et al. 6,028,689. Haeberle et al. teaches in column 1 lines 55-60 that his device is usable for optical focusing and alignment systems but does not disclose a mirror or reflective surface. Michalicek et al. teaches in column 1 lines 14-45 that some optical focusing and alignment systems use a mirror to make an optical connection between optical fibers. Since Michalicek et al. and Haeberle et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a reflective surface or a mirror in the device of Haeberle et al. so as to make the device usable in optical systems where a connection between optical fibers was required.

In regard to claim 38, see the abstract of Michalicek et al. which states, "individual micromirror assemblies can be placed close to each other, in side by side array ..."

In regard to claims 39 and 40, placing the individual micromirror devices of Haeberle et al. as modified by Michalicek et al. side by side would produce an array of discrete magnetic elements.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberle et al. in view of Fleming 5,867,302 A. Haeberle et al. teaches in column 3 lines 23-42 making the

movable platform and supporting frame at the same time and from the same material and further teaches making the device from silicon wafers but Haeberle et al. does not disclose monocrystalline substrates. Fleming teaches in column 3 lines 61-62 that monocrystalline silicon is a good choice for a MEM device. Since Fleming and Haeberle et al. are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized monocrystalline silicon as the type of silicon used in making a MEM device.

Claims 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberle et al. in view of Yokoyama et al. 6,094,293. Haeberle et al. discloses the moving coil motor but does not disclose a position sensing means. Yokoyama et al. teaches in column 2 lines 12-17 using a position sensing device in an optical switching apparatus. Since Haeberle et al. and Yokoyama et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a position sensing device in order to increase the reliability of the moving coil motor.

Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberle et al. as modified by Yokoyama et al. and as applied to claim 23 above, and further in view of Guckel et al. 5,644,177 A. Haeberle et al. as modified by Yokoyama et al. discloses the moving coil motor with position sensing but does not disclose inductive sensing. Yokoyama et al. states in column 14 lines 20-24 that the non-contact type capacitance sensor may be replaced by another non-contact type detector but does not mention an inductive sensor. Guckel et al. teaches in column 5 lines 7-9 that inductive sensing is simple and efficient. Since Guckel et al. and Haerbele et al. as modified by Yokoyama are from the same field of endeavor it would have been

obvious at the time the invention was made for one of ordinary skill in the art to have utilized an inductive sensing means in a moving coil motor in order to make the sensing means simple and efficient.

In regard to claims 25 and 26, Applicant is claiming that the sensor device is placed so as to sense if the movable member is in the home position or in the energized position. A person of ordinary skill in the art would know to place the inductive sensor device on the moving coil motor so that the sensor would operate properly.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberle et al. as modified by Yokoyama and Guckel et al. as applied to claim 25 above, and further in view of Matzuk 4,479,388. Haeberle et al. as modified by Yokoyama and Guckel et al. discloses the moving coil motor with the inductive position sensing but does not disclose details of how an position sensing inductive coil works. Matzuk teaches in column 6 line 59 to column 7 line 32 that a high frequency AC signal is used for an inductive position sensor and that the inductance of the coil is related to the voltage established across the coil with both the inductance of the coil and the voltage across the coil being related to the position of the movable member. Since Matzuk and Haeberle et al. as modified by Yokoyama and Guckel et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized high frequency AC signals with an inductive coil and sensing a voltage drop across the coil in order to establish the position of the movable member accurately and to thus improve the efficiency of the device.

Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberle et al. as modified by Yokoyama and Guckel et al. as applied to claim 25 above, and

further in view of Bergstrom 6,300,733 B1. Haeberle et al. as modified by Yokoyama and Guckel et al. discloses the moving coil motor with the inductive position sensing but does not disclose using the electrically conductive elements (i.e., the drive coil) as the transmitter or receiver cell. Bergstrom teaches in figure 1 that the drive coil can also serve as the transmitter coil. Since Bergstrom and Haeberle et al. as modified by Yokoyama and Guckel et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized the drive coil as the transmitting coil in order to reduce the cost of the device by reducing the number of parts used therein.

In regard to claim 29, see Haeberle et al. figure 1B.

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberle et al. in view of Novotny 6,483,962 B1. Haeberle et al. discloses the moving coil motor having a working surface but shows the electrically conductive elements on the top side of the movable member 1 as shown in figure 1B. Haeberle et al. explains how the coils and movable element are constructed in a batch process in column 3 lines 23-39. Novotny discloses in column 9 lines 36-40 having a working surface on the top of a moving coil device and having electrically conductive elements on a bottom side. Since Novotny and Haeberle et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have placed the electrical conducting elements on the bottom side of the movable member in order to allow more room for the mirror when the moving coil motor was to be used for a switch in an optical fiber network.

Allowable Subject Matter

Claims 13-15, 22, 30-32 and 41-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or teach a moving coil motor as recited in claim 1 having a fixed frame with parallel oriented top and base support structures as recited in claim 13. The prior art of record does not disclose or teach a fixed frame for a moving coil motor having a plurality of springs, each spring cantilevered from a corner of the fixed frame and extending to support the movable member at a position near an adjacent corner of the fixed frame as recited in claim 22. The prior art of record does not disclose or teach a moving coil motor having a transmitter or receiver supported by the fixed frame with the electrically conductive elements supported on the underside of the movable member facing the coil on the base structure as recited in claim 30. The prior art of record does not disclose or teach a moving coil motor having electrically conductive elements supported on the top side of the movable member combined with the transmitter or receiver coil supported on the top of the base support structure couple to the fixed frame, facing the underside of the movable member as recited in claim 31. The prior art of record does not disclose or teach an array of moving coil motors where the first array of ferromagnetic elements defines alternating polarity between adjacent elements as recited in claim 41. The prior art of record does not disclose or teach an array of moving coil motors having first and second arrays of ferromagnetic elements with the first and second arrays having different polarities as recited in claim 42.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Judson H Jones whose telephone number is 703-308-0115. The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JHJ
April 17, 2003

